This Day in Our History.

When You Go South

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THIS is the anniversary of the famous defeat of the Brilish at New Orleans by Andrew Jackson, known as "Old Hickory." The English, led by picked veterans under Sir Edward Pakenham, attempted to storm the Provincial redoubts. They were terribly beaten and their commander

Poetry and Science of Rainbows

Why the Complete Circle of a Rainbow Can be Seen Only Under Special Conditions

By Garrett P. Serviss.

YOU say rainbows never appear as complete circles, but peo-pie living at the Grand Canyon, Arizona, have assured me that they have seen this very thing secur in the canyon. Are they migraize or is selence mistaken? M. R. LEIGH.

EITHER is mistaken. I have no copy of my article at hand, but it is my strong impression that in it I qualified the statement about rainbows never appearing as more than half-cir-cles by the words, "except from a great elevation," or some equivalent expression.

If I did not use that qualification it was an oversight, which I regret, and I will now endeavor to atone for it by explaining why a rainbow as ordinarily seen never shows more than half a circumference, and usually considerably less than that, although in certain circumstances it may show a full

Remember to begin with, that the specialor's back must be to the sun, the drops of rain in the air being before him, while the sun, whose rays they refract, reflect and send back to his eyes, is behind him. Remember, also, that the angle that the rays coming back from the raindrops make with a straight line drawn from the sun through the observer's head to the centre of the rainbow circle, is shout 42 degrees for the red, or outside, rays of the bow, and about 40 degrees for the violet, or inside,

Thus the bow, which is about two degrees broad, cannot, at its outer circumference, be more than 42 degrees from the point where the shadow of the observer's head (if could be seen), would be projected, which point is, of course, the centre of the rainbow circle.

When the sun is on the horizon, in a flat country, or at sea, the shadow would fall on the opposite horison and the top of the rainbow arch would have an elevation of 42 degrees, and half of its circle would be seen. If the sun is 29 degrees high, the shadow will fall 29 degrees below the plane of the horizon, while the top of the arch will be lowered 30 degrees, and a correspondingly smaller part of the full circumference of the bow will

When the sun is about 40 degrees high, a little sector of the top of the arch may be visible right on the horizon, and if the sun is 42 degrees, or more, in elevation there will be no rainbow seen, at least no primary bow. Now let us consider the case of an

ebserver who is elevated to a great height above the horizon, as on a lefty mountain peak, or in a balloon. In such a situation it is possible to see the entire circle of a rainbow, the lower half being no longer concealed by the interposiof the earth

Thus, standing on the edge of the Grand Canyon, with a precipice of thousands of feet yawning beneath you, and with a rainbow formed in the mists of the canyon, between you and its opposite wall, it is clear that, in favorable circumstances, you may see the entire circle of the bow. since your eye may range down more than 41 degrees below the center of the bow without passing from the mist-charged air to the ground. In other words, wherever a line drawn from the sun through our head would mark the center circle in the air 84 degrees in diameter, every part of which would he in your range of vision, it would he possible for a complete circular rajnbow to appear to you.

This interesting situation occurs many waterfalls, where steep and high banks overhang a vas chasm into which the waters pour, at Niagara, throwing up clouds spray, that become a home of rainbows. It also occurs when the ebserver is in a balloon or an sero-plane at a great elevation. M. Flammarion, the French astronomer, who was very fond of ballooning in his younger days, once saw a circular rainbow in that way, and curiously enough it presented the appearance when clouds happened to hide the upper half of it

cular rainhows may also be reen when the sunlight is reflected on the surface of smooth water because then the origin of the rays ion, which would be below the horizon, the bews being produced respondingly high in the air. condition frequently occurs over the basins of waterfalls, and often on his producing the phenomenou of rainbow upside down, noticed by Flammarion from his balloon. There are few more exquisite specacles than that presented by int playing and quivering of head waterfall rainbows on a sun-

he angles above mentioned apply only to the primary or principal arch of a rainbow. Often a sec-ondary and fainter arch is seen outside the primary one, having an extreme radius of about \$6 degrees. combinations of circum enter, groups of rainhows are sometimes seen, such as the "triple rain-bow," in which one of the arches is formed by sunbeams reflected from water, and this such intersects the producing an extraordinary and



A charming photograph of Doris Kenyon, the star in "The Hidden Hand."

The Hidden Hand

A SERIAL OF THRILL AND MYSTERY.

By Arthur B. Reeve, Crester of the "Craig Kennedy"

> EPISODE 8. The Slide for Life.

Copyright, 1917, Star Company. AMSAY for a long time had been observing how Verda was flinging herself at him.

He was really afraid of Verda, "If you don't mind," he suggested, stopping her hand gently, "I think flowers are-just a bit effeminate." At that moment there was a noise

at the door lights had come tripping lightly downstairs and had paused just long enough to see the little drama.
She smiled as Ramsay jumped up

and crossed to her quickly.
"There's a beautiful moon to-night," he whispered. Tet's take a stroil out in the garden."

In the Summer House.

A moment inter she sauntered off,

oblivious to Verda. If anything had been necessary to complete the understanding between Dorie and Rammay it had been the quick succession of attacks from the Hidden Hend from which the young Secret Service man had so deverly been able to protect her. And now, while for a few moments there was peace and quiet in the Whitney

house, it was not stronge that the lovers should take advantage of it. The garden was indeed beautiful, bathed in the shimmering moonlight, and Ramsay knew that Na-ture had staged for him just the opportunit; he wanted

Slowly, as they strolled along, forgetful of time, knowing only that they were glone, his arm stole about her, and the magic tores youth cast a spell over both Finally they came to a rustic Summer house, where in the half

shadows of the vines and half light of the moon they paused.

Pressing her warm vilitie hand.

Rameny quietly slipped a sparkling solitaire over the left ring finger where a few days before had git-tened the gift of the fattiless Scarley. Doris did not resist. Her beart was einging with joy as whe draw her closer and looked

up at him. Their lips met in a long From the porch, however, Verda was watching, and as she saw Ram-sey and Porls together she was almost insane with lealousy. She could not look at them longer in their happiness, but turned and ran, angrily, into the house. As she passed the library, she

beard a light tap on one of the French windows, and a moment later it opened, disclosing one of the emisearies of the Hidden Hand. I

drawer of the desk," he directed in Creater of the "Craig Rennedy" a hurried whisper. "Tou'll find a diagram. I must bent it before anyone seen me. Then leave the Verda almost seized the papers as she hurried away from the door ough which the emissary revelope and began studying the dia-

Verda Does His Bidding.

Then she went over to the writing deak. She pulled out the lower firawer, fit was empty. Bur in the back was a secret spring, as indi-cated on the drawing. She pressed it and the secret drawer flew open. There was nothing in the averet drawer either, and she slipped into it the letter which the Hidden Hand had written. Then she placed the drawer back and laid the diagram on the table with some papers as though someone had just discovered them all and left them there for examination

that the butler enuntered into the library. No one was there and be ing of an inquisitive nature, as serhen began nosing over the papers on the table until he suddenly turned over the plan of the secret drawer. He studied over it a modeck. It was clearly the deak tneant in the plans. He had never known that there was a secret

The butler strode over to the drawer. There, in the back, was the secret compartment of the plans sure enough, and in it a letter. As he read it his even diluted. was something important, and he did not slop to think that it was in-tended that it should be found. In-

stead, he was immersel, pleased with himself by the discovery. At that mement To Scarley en-tered and case the butler standing o the desk reading something What's that" he demanded, as he came up behind him

Scarley had scarcely rend the note ben Doris and Ramsay hearing voices in the library, entered, fol Verda, who had been Ramesy was between Scarley and

Scarley realized it had anatched the letter from his hands, reading it over aloud.

"We must find the will," ex-claimed Doris. "I'm sure my father explained everything in it." Just then the French doors opened and Uncle Abner bustled in having beard outside what was passing
"You have not proved your identity," he interrupted. "You must Not unless the will says so," re-

To Be Continued To-morrow.

DRACULA, THE VAMPIRE

By BRAM STOKER.

A she came in, she handed a number of sheets of typewriting to Van Helsing. He looked over them gravely, his face orithtening up as he read. Then holding the pages between his fluger and thumb closed on her pulse, as I thought as the pages between his fluger and unconsciously, as she spoke:—

humb he said;
"Friend John, to you with so much
if experience already—and you, too,
lear Madam Mina, that are young—
lear Madam Mina, that are young—
lear is a leason; do not fear ever to
hink. A half-thought has been buzhing often in my brain, but I fear to
let him loose his wings. Here now.

MINA GAVE HYPNOTIC

HISTORY OF EVENTS.

"The count is a criminal and of crimilet him loose his wings. Here now.

Alfficulty he has to seek resource in

"What does this tell us." Not much:

no! The Count's child-thought see
nothing; therefore he speak so free.
Your man-thought see nothing, my
man-thought see nothing, till just
now. No! But there comes another
word from some one who speak with
out thought because she, too know
not what it mean—what it might
mean.

"Just as there are elements which
"Just as there are elements which

"Just as there are elements which est, yet when in nature's course they move on their way and they move on their way and they ouch—then pouf! and there comes tist, for it is of you that we think." flash of light, heaven wide, that lind and kill and destroy some; ut that show up all earth below for agues and leagues. Is it not so?

"Then, as he is criminal is nce. Still, your mind works true and rgues not a particulari ad universale. here is this peculiarity in criminals. It

SAYS CRIMINALS HAVE CHILD-BRAINS.

"The criminal always work at one will of none other. This criminal has not ends." The Professor stood up:

chile, but empirically; and when he learn to do, then there is to him the ground to start from to do more. Dos pou sto, said Archimedes. "Give me a fulcrum and I shall move the world."

"To do once is the fulcrum whereby child-brain become man-brain; and until he have the worker to construct the nursers to do more he con-

sing often in my brain, but I fear to let him loose his wings. Here now with more knowledge, I go back to where that half-thought come from, and I find that he be no half-thought at all; that be a whole thought though se young that he is not yet strong to use his little wings.

"Nay, like the 'Ugly Duck' of my friend Hans Anderson he be no duck thought at all, but a big swan-thought that sail nobly on big wings, when the time come for him to try them. See I read here what Jonathan have written:

"That other of his race who, in a later age, again and again, broughthis forces over The Great River into Turkey Land; who, when he was beaten back, came again, and again, and again, though he had to come alone from the bloody field where his troops were being slaughtered, since he knew that he alone could util-

one from the bloody field where his cally, as he stooped and kissed her kinew that he slone could u'ti-ately triumph.' "What does this tell us." Not much:

"What does this tell us." Not much:

"Seventy two only and in all this

"I will try to; but you will forgive

"Then, as he is criminal he is sel-"Well I shall explain. To begin, have you ever study the philosophy of crime? Yes' and 'No.' You. John, yes, for it is a study of insanity. You, no. Madam Mina; for crime touch you not—not but purpose is remorseless. As he fied back over the Danube, leaving his s so constant, in all countries and at all is intent on being safe, careless of all "So, his own selfishness frees my mes, that even police, who know not such from philosophy, come to know it mpirically, that it is. That is to be emdered over me on that draadful night. dreadful night.

"I felt it! Oh. I felt it! Thank God for His great mercy! My soul is freet than it has been since that awful hour; and all that haunts me is a feat crime—that is the true criminal who lest in some trance or dream he may seems predestinate to crime, and who have used my knowledge for his

will of none other. This criminal has not full man-brain. He is clever and cunning and resourceful: but he be not of man-stature as to brain. He be of child-brain in much.

"Now this criminal of ours is predestinate to crime also; he, too, have child-brain, and it is of the child to do what he have done. The little bird, the little gain al learn not by pringerial to the sale of the child to do what he have done. The little bird, the little fish, the little sammal learn not by pringerial to the sale of the child to do what he wildow most reckoned on for his evildoer most reckoned on for his

he have the purpose to do more, he conhe have the purpose to do more, he continue to do the same again every time, to him, then his selfash child-brain just as he have done before! Oh, my dear, I see that your eyes are opened thinks, too, that as he cut himself off and that to you the lighting flash show all the leagues." for Mrs. Harker began to day her hands and her eyes sparkled.

The world on the leagues of him to you; there is where he fail!

(To Be Continued Tomorrow)

Advice to the Lovelorn By BEATRICE FAIRFAX

A Soldier's Problem.

Now you shall speak. Tell us two dry

DEAR MISS FAIRFAX:

Six months ago I met a young lady, and we became attached to one another. I am in the army and expect to go away in a short time. I gave an engagement ring. with the understanding we are to marry if I return. The girl is not satisfied, and begs me to marry her now. She is a dear girl, and I feel if I marry her now, I may come back so crippled I wouldn't be able to support her. I love her enough not to ward to ruin her life in this way; because she will always have the chance to make a good match, and I feel if I marry her now I would be cheating ? happier future than I may be able to give her. We are both twenty four. I want to know whether you think I am right or SOME will think your principles

right, the rest think them wrong-that sums up the situation and the attitude people are going to take toward your problem, Some will admire your unselfishness, your self-control, your wish to do nothing that might possibly hamper and handicap the future of the girl you love. Others will feel that most of life is taking chances and that, since your sweetheart wants to marry now and desires to feel that you belong to each other, you would be doing her the greater kindness in yielding. After all, most of life is taking chances, and we never have any written guarantees of happiness or good fortune. Do what you think right-not fust what will let you swell out your chest and feel proud of yourself, but what will walls bring the greatest happiness,

Make the Best of It. DEAR MISS FAIRFAX

I have been geing about with a chap twenty-one (six months my junior), for three years. We have grown to love each other Before our acquaintance he went about with a girl I knew, but they had a dispute and didn't speak

to each other until only last

week. He is again going about

with her and I seriously object

What shall I do? He told me he didn't want any one building aircastles about him. as he will have to lead a bach-elor's life for several years, to help support his parents and sisters, one of whom he is educat moment my mother hears of his re-friendship with this girl in question for I cannot reason with her. Please advise me what do and also if I am in the right

should not see this girl again.

MY dear girl, what can you de about it? If your friend again enjoys his visits to the girl for whom he used to care, den't you see that you are nagging at him and trying to forbid his seeing her will accomplish nothing? Now, he has distinctly told you that you must not dream of marriage, with him as your fairy prince. If you are just to be his friend, then he has every right to have other friends. Since he cannot be more than your friend, why don't you cease building your whole life with him as the keystone, and find other interests to fill in part of your time? When a girl finds herself in a sitnation where she is practically helpless she is very foolish indeed to protest and argue and to make hernelf and everybod, eine min-

d erable.

on Broadway last night," said the Manicure Lady. "Me and Brother Wilfred was down town to a show, and after the show we walked along the old White Way for about ten blocks, trying to impering that it was the old Broadway of them dear, dead years which has went beyond recall. I couldn't amagine it at all, and even Wilfred, who has got a perfectly grand imagination, had a hard time

thinking it was the same old

street." "Snuffing out them lights on Broadway won't make much difference to me" said the Nesa Barber. "Over in the Bronz, where we live, there is plenty of light to suit us, and I guess the folks that was always raving about the White Way will have to get used to the change. it's a change that will mean nore change in their pockets, that's sure.

"Wilfred says a great poem should be wrote about dimming the lights," said the Manicure Lady. He started one that went:

"The lights of Broadway are no more And darkness now has came

To where their gambling gents of Steered suckers to a game.

Them flags are furled and yet the world Meves on about the same "He said it all right," agreed the

Head Barber. "The great beauty about doing without things is finding out how easy it is to do without them. That's the great thing gents and ladies on this here earth is all the time finding out. Now I guess a lot of them rounders will go home nights and get their regu-

lar sleep." "I think it's going to be a good thing after all," cald the Manicure Lady. "Some of the nicest folks I know, George, will be better off for getting their rest nights instead of remping up and down Broadway up to midnight and after. Folks will stay home and spend their time in mediation, or whatever they call

them now. This one is of tan, blue, or black and this is a good dress to buy "sight unseen," as the sash white gingham, with a collar of white Swiss emmay draw it in to fit the lines of almost any figure, By WILLIAM F. KIRK

The Manicure Lady

RUTH is stranger than fiction, they say, and a

taffeta is navy blue, black, or Copenhagen blue, and

taffeta dress is evidence to bear it out. The

ain't any telling how many great thoughts will be thought and how many inventions will be figured out by people that used to fool around evenings on the White Way. Wherever there's thorns there's roses. George, if people only was patient and stopped to realize it."

"Well, the old town is slow about making changes," said the Head Barber, "and a lot of the regulars dies hard, but changes come just the same, kid, as them years go by. I can notice a change in me the same so the town is changing. I ain't so dead sure about things as I used to be. I ain't so ready to find fault with my friends and ain't so quick to pat myself on the back as I used to be.

"The way I feel now, my only kick is that life is too short for me to do the good I would like to do to

that there deep thinking, and there + make up for some of the bad I done." "You min't never been a bad fel-

like a stranger in a strange land unless you have

a gingham frock, for "down there" they are wearing

low, George," the Manicure Lady reassured him. "There's a lot of worse guys than you, and I see 'em every day of my life. Wilfred gots some grand thoughts now and then, even if he is a little giney about speaking them, and he was saying the other night that a man's life is like Broadway, full of lights while the young and happy years goes by. and getting dim and quiet toward

"I think he was rapping at Father a little about the quiet part as Father hasn't said nothing lately about handing Wilfred any spending money, but it's true what he said, just the same. Folks get quieter as they get older "If that's the right dops," said the Head Barber, "you're sure get-ting younger every day."

Do You Know That---

Spokane, Washington, belongs the distinction of circulating the first antiseptic garm-proof national bank-notes. The United States Treasury is still experimenting with devices to laundry dirty banknotes to bright crisp ones, but the Spokane Bank has the first sanitary money on record. Fifty thousand dollars in bills, just put out by the bank, were signed with an ink which consisted largely of carbolic acid. The result is the bills are saturated with an agency which

An artificial lvory of creamy whiteness and great hardness is made from good potatoes washed in diluted sulphuris acid, then boiled in the same solution until they become free of the acid and slowly dried.

means death to the most vigorous

A French horticulturist has been experimenting with the stems of spinach for the purpose of making paper, and he has produced satis-

To the old National Bank of + factory specimens, something like to Japanese paper

Three of the most important banks in Europe were founded by Scotchmen, vis., the Bank of England, France and Vienna

The muscles of a bird's wing are twenty times more powerful, propertionately speaking, than these of a man's arm.

The Bank of England has thirtytwo different methods of detecting forged banknotes

Fourpenny-places were first struck in the reign of Charles the First, 1662.

Alkall metals are found to be the most transparent to the Roentges TRUB. It is believed that the polks was

Cyprus raises about 20,002 tons of locust beans a year.

Infectious diseases are unknows

originally a serbian war dance.